Distributed Energy Road Show

Cocoa, Florida
January 17, 2003

Co-hosted by the U.S. Department of Energy's
Atlanta Regional Office and the Florida Solar Energy Center

Agenda

8:30	Registration
9:00	Welcome *Terri Roberts, U.S. Department of Energy-Atlanta Regional Office* *Philip Fairey, Interim Director, Florida Solar Energy Center*
9:15	DE: The National Perspective *Patrick Quinlan, National Renewable Energy Lab (NREL)*
9:45	Photovoltaics: Installation and Operation *Pete DeNapoli, Shell Solar*
10:30	DG Interconnection *Bob Reedy, Turbec Americas*
11:15	Fuel Cells: Installation and Operation *Anne-Marie Borbely-Bartis, Battelle at U.S. Department of Energy and* *Patrick Quinlan, National Renewable Energy Lab (NREL)*
12:00	Lunch & Presentation
	Hydrogen *Dr. Clovis Linkous, Florida Solar Energy Center*
1:00	Facility Tour *Jerry Ventre, Director, Photovoltaics and Distributed Generation Division,* *Florida Solar Energy Center*
2:15	Microturbines and CHP: Installation and Operation *Rick Lucas, Elliott Energy Systems*
3:00	Adjourn

Attendance List

Workshop Notes – Q & A

DE: The National Perspective

Comment: We would like to take a survey of who is in attendance today. Looks like we have the Florida Department of Environmental Protection, the Florida PUC, a few planning officials, a fire inspector, a few building inspectors, the City of Orlando Parks and Recreation Department, a facility manager, a few utility representatives, and a few engineering consultants.

Photovoltaics: Installation and Operation

Q: Where did you find the information on the early adopters?
A: From the California Energy Commission.

DG Interconnection

Q: From a technical standpoint, what is the upper limit/penetration rate of DG?
A: We do not have an answer. Studies have been done. Perhaps it is 25% - it depends on what it is made up of (PV, wind, other, etc.). 3%-5% is not an issue really.

Comment: DG resources are inherently more stable. In the State of California, distribution feeder analyses in conjunction with EPRI and PG&E with a 25% penetration rate did nothing but improve and stabilize the system.

Q: I suspect that there may be 10,000 home generators in Dade County, Fla., that were purchased after Hurricane Andrew. Is there a way to keep track of how many emergency generators are out there?
A: No regulatory records of home generators exist.

Fuel Cells: Installation and Operation

Q: How much does the fuel cell demonstrated here today cost?
A: $3,000

Q: How long will this fuel cell run?
A: A fuel cell this size will run 3-4 hours.

Q: Is this fuel cell capable of running continuously?
A: Yes, as long as it has hydrogen, it will keep running.

Q: Would the water that is produced from the fuel cell have to be treated?

A: No, it is distilled water.

Q: I have heard that fuel cells can be used to power cell phones? Is this true?
A: Yes. Some companies (for example, HP) have entire divisions dedicated to this type of research.

Comment: If fuel-cell-powered phones come to market, it would be a great boost. It would really increase public awareness, especially with the children/teenagers.

Q: Has the issue of the tracer gas requirement been revisited?
A: This is an emotional issue that is still being discussed.

Q: What about odorizing the hydrogen vs. sensors?
A: Color-coding has been discussed, as well as the idea of putting a little bit of ammonia in to create an odor. Research is still being done.

Hydrogen

Q: Regarding the new pipeline in the Gulf of Mexico, can it take hydrogen?
A: Yes, at 40-50 psi – no problem.

Comment: The problem with hydrogen at 300 psi is embrittlement.

Comment: Utilities often use hydrogen on large-scale basis for cooling.

Q: How do the hydrogen sensors compare to other gaseous sensors (as far as accuracy, etc.)?
A: Very comparable; may even be easier than other hydrocarbons.

Q: Are there hand-held sensors that are available? (For example, a sensor that a firefighter could hold as he walks into a building.)
A: Yes.

Microturbines and CHP: Installation and Operation

Q: How loud is the microturbine (the one that is on display here today)?
A: The noise level is tolerable: 70 dBA at one meter.

Q: Can you put the microturbine outside?
A: Yes, but this unit would need an enclosure. Almost half of the manufacturers are offering both indoor and outdoor models.

Q: What is your input gauge pressure on your units in Stuart, Fla. (Elliott Energy Systems' headquarters)?
A: 2-3 psi commercial.

Q: Would the company allow you to have up to 70 psi?
A: Not typically.

Q: Can microturbines load follow?
A: Yes.

Q: I believe that fuel cells cannot load follow. Is this correct?
A: Incorrect; the fuel cells themselves can load follow perfectly. The reforming part of the system is what stops the process.

Q: Is a 10kW unit economically feasible for a typical residential home?
A: A typical home uses less than 5 kW, so it is not really feasible.

Q: What if you tried scaling down the 10kW unit? Would the economics improve?
A: Probably not. The economics improve as you get larger, not smaller.

Comment: Fuel cells are going to try to capitalize on the size niches.

Q: Do you need to derate a 100 kW unit?
A: Probably only be able to simulate in the 50-60 kW range.

Q: Can the microturbine run with water injection (inlet)?
A: No, it does not like water. It needs dry fuel.

Q: How long does it take to start the microturbine and get it going?
A: 2-3 minutes. If you want it to run a long time, you should give it 10 minutes to start up.

Q: What is the temperature of the unit?
A: Please refer to the specs on Elliott Energy Systems' web site for this information.

Comment: In the future, there will be widespread applications where fuel cells will be combined with microturbines. This is already happening in some locations today.